DOCUMENT RESUME

ED 175 441 IR 007 608

AUTHOR Kohr, Richard L.
TITLE The Relationship of Homework and Television Viewing to Cognitive and Noncognitive Student Outcomes.
PUB DATE Apr 79
NOTE 25p.; Paper presented at the Annual Meeting of the National Council for Measurement in Education (San Francisco, California, April 1979)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Affective Behavior; *Cognitive Processes; Family Environment; *Homework; Parent Education; Race Influences; Sex Role; *Television Viewing
IDENTIFIERS Family Size

ABSTRACT

This paper reports on secondary analyses of data collected in March 1978 by the Pennsylvania Educational Quality Assessment Program, which was designed to examine television viewing and the amount of school assigned homework in relation to student cognitive and noncognitive outcomes. Also examined were television viewing and homework patterns for groups categorized by sex, race, type of community, stability of home residence, parental educational level, size of family, and expectation level; data used were derived from 90,000 students in grades 5, 8, and 11 in 750 schools participating in a statewide assessment. Related studies from the states of Rhode Island and Texas are compared to this study. A student level analysis involving television indicates that there is little evidence of a meaningful relationship with cognitive or noncognitive achievement. In the school level analysis, where inferences refer to characteristics of schools rather than individuals, a strong negative relationship between television viewing and cognitive achievement was indicated. (Author/RAO)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED175441

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

The Relationship of Homework and Television Viewing to Cognitive and Noncognitive Student Outcomes

Richard L. Kohr
Pennsylvania Department of Education

Presented at The Annual Meeting of The National Council for Measurement in Education

San Francisco, California
April 1979

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Richard L. Kohr

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

TM007608

Title: The Relationship of Television Viewing and Homework to Cognitive and Noncognitive Outcomes

Author: Richard L. Kohr

Institution: Pennsylvania Department of Education

ABSTRACT

The present paper reports on secondary analyses of data collected in March 1978 by the Pennsylvania Educational Quality Assessment Program. Specifically, these analyses were designed to examine television viewing and amount of school assigned homework in relation to student cognitive and noncognitive outcomes. Also examined were television viewing and homework patterns for groups based on sex, race, type of community, stability of home residence, parental educational level, size of family and expectation level. Data for this investigation were derived from 90,000 students (from grades 5, 8 and 11) in 750 schools participating in statewide assessment.

The Relationship of Homework and Television Viewing
to Cognitive and Noncognitive Student Outcomes

INTRODUCTION

The present concern regarding the quality of education, declining test scores, the role of television in shaping children's behavior and the virtue of homework has stimulated the present series of analyses using data collected during March 1978 as part of a statewide testing program.

Pennsylvania's Educational Quality Assessment (EQA) Program is designed to provide schools with data relevant to making educational decisions. The student outcomes measured by the assessment package include both cognitive and noncognitive areas. Assessment takes place at grades 5, 8 and 11 and results in a 24 page report for each school building. Since the reporting unit is the school building rather than the individual student, matrix sampling is used to keep testing time down at a manageable level for the grades concerned.

In addition to the cognitive and noncognitive areas, the program measures a number of background variables such as parental education, type of community, sex, expectations, etc. In the spring of 1978, the EQA program implemented a revised assessment package including new student background variables, several of which quickly caught the eye of educators and press alike. These included "the amount of time spent watching TV during an average school night" and "the amount of homework during an average school night." This paper reports on a series of analyses conducted with this data base, examining the relationship of homework and TV viewing to achievement.

Data Base

Data for the present analyses was derived from approximately 90,000 students tested in March 1978. There were approximately 30,000 students in each of three grade levels, 5, 8 and 11. These students came from 113 school districts, broadly representative of the State of Pennsylvania. They were housed in 453 elementary schools, 151 middle or junior high schools and 128 senior high schools. Analyses conducted with student data was rendered more cost effective by systematically sampling about every 9th student from the main data tapes, producing files consisting of about 3,100 to 3,600 cases per grade level. Student outcome scores were converted into standard scores (with mean of 50 and standard deviation of 10) in order to control for slight differences that occur depending on which test form a student received. The matrix sampling technique used by EQA involves 4 forms at grades 8 and 11 and 3 forms at grade 5. During test administration, booklets are distributed in such a way that an essentially random 4th (or 3rd) of the students receive a given form. All students respond to an equal number of items on each of the 14 areas assessed. Therefore, if there are 60 items in math in the overall assessment, each form would consist of a different set of 15 (or 20) items. The original assignment of items to forms was done in such a way as to minimize form to form differences in difficulty.

Student Outcomes

There are 14 major student outcomes (termed goals) which are measured by over 600 items comprising the assessment package at each grade level. Areas designated as cognitive are reading, writing skills, mathematics, citizenship knowledge, health knowledge (grade 5), career awareness, knowledge of human accomplishments and information usage. Noncognitive areas include self-esteem, understanding others, interest in school and learning, societal responsibility, health practices (grades 8 and 11), creative activities and appreciating human accomplishments. A brief description of these instruments may be found in Appendix A. A more extensive description of the test package is provided by Hertzog (1978). Technical properties of the instruments including reliability and validity are found in Kohr and Hertzog (1979).

Homework and Television Viewing

Throughout this paper, the acronyms HOMEWORK and TVWATCH will be used when referring to these variables.

HOMEWORK--students reported their estimates of time typically spent on homework from the time they got home from school until they went to bed. The response categories were (1) none, (2) less than one hour, (3) about one hour, (4) about two hours and (5) about three or more hours.

TVWATCH--students estimated the amount of television viewing from the time they got home from school until going to bed. Response categories were (1) about one hour or less, (2) about two hours, (3) about three hours, (4) about four hours and (5) about five hours or more.

Student Background Variables

The student background variables incorporated in this report, together with their acronyms, are presented below. A fuller description of these variables may be found in Appendix B.

PAREDUC (Parental Education) -- the students reported the highest level of formal education attained by their mother (or female guardian) and father (or male guardian). The higher level was used. Response categories ranged from none or some grade school up through Ph.D. or professional degree.

SEX (Student) -- categories are male and female.

RESIDE (Type of community in which the student resides)
Response categories ranged from rural to suburban to urban areas.

Statistical Analyses

The analyses applied to the data are of two major types. One deals with student level data which presents frequency information on the amount of homework and amount of television viewing and also the relationship of homework and TV viewing to cognitive and noncognitive achievement. The second level of analysis was conducted using school level data and primarily examines the relationship of HOMEWORK AND TVWATCH to cognitive and noncognitive outcomes for various grade levels and sub-groups based on variables such as RESIDE and PAREDUC. These data are in the form of school means.

RESULTS

Amount of Time Spent On Homework and Watching Television

The amount of time students report spending on homework and viewing television is summarized in Tables 1 and 2. The data is displayed not only for grades 5, 8 and 11 but also for sub-groups based on RESIDE, PAREDUC and SEX for the 8th grade level. Reporting one grade level is done in the interest of space economy and is made possible by the general similarity of trends found across grade levels. Although additional breakdowns were performed using other background variables, the results overlap considerably for those variables which are correlated with PAREDUC or RESIDE. The amount of time spent on homework (Table 1) seems to be fairly comparable across grade levels with the most dramatic difference appearing in the "none" category, where the percentage increased in a linear fashion from grade 5 (2.4%) to grade 1 (17.2%). Little difference is observed across RESIDE categories which was likewise true at grades 5 and 11. There is some tendency for children of more highly educated parents to spend more time on homework. This was also true at grades 5 and 11. There was a distinct tendency for female 8th graders to report more time on homework than males. In fact, 56.8% of the females reported spending one or more hours on homework on a school night as opposed to only 51.6% of the males. A similar difference was found for grade 11. However, at grade 5, both sexes reported very similar figures.

Television viewing patterns were very similar for 5th and 8th graders, with nearly 50% responding that they watched four or more hours of television per school day. By grade 11, only 23% indicated they watched four hours of television. Among the various types of communities, television viewing patterns were fairly similar, with the exception of urban students who reported a greater amount of watching. A pattern of decreasing viewing time is evident as parental education increases. For example, 31.7% of those students having at least one parent who is a college graduate reported watching four or more hours of TV, while 57.4% of the students whose highest level of parental education was "some high school" reported watching the same amount of television.

TABLE 1

Amount of Time Spent on Homework Per School Night for Various Groups and Grade Levels in Pennsylvania

Group	N	Grade	Percent Responding to Each Category: None	Less Than 1 Hour	About 1 Hour	About 2 Hours	3 or More Hours
Total Sample	3369	5	2.4	30.8	43.1	17.6	5.9
Total Sample	3087	8	9.3	31.7	39.2	15.7	3.9
Total Sample	3581	11	17.2	28.4	29.9	18.8	5.6
RESIDE							
Open Country	695	8	10.4	32.9	40.0	13.5	3.2
Small Town	833	8	10.0	30.4	40.6	15.6	3.5
Suburban	890	8	7.0	31.8	39.6	17.3	4.4
Urban	615	8	10.7	31.5	36.7	16.3	4.7
PAREDUC							
Some High School	377	8	14.8	32.4	33.7	12.7	6.4
High School Grad.	1335	8	10.6	32.7	39.3	13.4	3.0
Some Post H.S. Trng.	654	8	6.1	30.7	41.6	18.8	2.8
College Graduate	641	8	6.1	28.2	41.5	18.2	5.9
SEX							
Male	1559	8	14.2	34.3	35.8	13.0	2.6
Female	1493	8	4.4	28.9	42.8	18.6	5.4

TABLE 2

Amount of Time Spent Watching Television Per School Night for Various Groups and Grade Levels in Pennsylvania

Group	N	Grade	Percent Responding to Each Category: Up to 1 Hour	About 2 Hours	About 3 Hours	About 4 Hours	5 or More Hours
Total Sample	3369	5	10.5	16.4	23.1	20.0	29.9
Total Sample	3087	8	11.8	18.5	23.3	19.9	26.5
Total Sample	3581	11	28.6	27.1	21.2	11.5	11.6
RESIDE							
Open Country	696	8	13.9	19.1	23.7	20.0	23.3
Small Town	831	8	9.5	18.6	23.8	20.4	27.6
Suburban	883	8	12.9	19.6	23.9	19.2	24.3
Urban	607	8	11.0	15.8	21.6	28.0	31.8
PAREDUC							
Some High School	378	8	9.5	13.0	20.0	17.5	39.9
High School Grad.	1338	8	9.9	15.8	23.6	21.6	29.1
Some Post H.S. Trng.	654	8	11.1	20.6	23.5	21.1	23.5
College Graduate	638	8	18.3	25.4	24.6	15.7	16.0
SEX							
Male	1558	8	11.9	18.0	23.0	19.2	27.8
Female	1496	8	11.6	19.0	23.5	20.6	25.3

The amount of time Pennsylvania youngsters spend viewing TV seems to be comparable to what other states have reported. For instance, Rhode Island's Assessment Program (1977) surveyed students television viewing habits using similar, although not identical, response categories. However, it is possible to draw a comparison with the Pennsylvania figures in terms of a category based on three or more hours of viewing. In Rhode Island, 65.3% of the 4th graders and 72.9% of the 8th graders viewed three or more hours of TV daily, while the Pennsylvania figures are 73% and 69.7% for grades 5 and 8, respectively. A comparison of the amount of homework in Rhode Island and Pennsylvania would be misleading due to differences in the wording of the response categories.

The Relationship of Cognitive Achievement With Television Viewing and Homework

Correlation coefficients between television viewing and achievement in each cognitive area are presented in the upper portion of Table 3. The relationships are consistent in that they are all low negative values, ranging from -.07 to -.15. With sample sizes as large as 3,000 virtually all of these correlations are statistically significant. It is important to realize that these linear relationships account for only about 2% of the test score variance.

Another way of viewing the relationship between achievement and television viewing is to present mean scores for each television viewing category as several other states have done. Table 4 summarizes achievement data from three different states. Reading comprehension was selected to represent the cognitive area from the Pennsylvania data since the mean score patterns for each of the cognitive areas are nearly identical. Data from statewide testing programs in Rhode Island (1977) and Texas (1977) are included to show the tremendous consistency in the nature of the relationships. Notice that the mean achievement scores for grades 4 through 8 tend to increase from a "less than one hour" category to the "two hour" category where it peaks (except for Rhode Island, grade 4). This is generally followed by a gradual drop to the "four hour" category and then a sharper drop in achievement at the "five or more" category. For high school students, the achievement data for Pennsylvania and Rhode Island show a gradual decline across television viewing categories with a sharper drop at the 5+ hours point. Again, with very large sample size, nearly all differences between mean scores are statistically significant although they may have little practical significance.

Since the pattern of mean scores for grades 4 through 8 appears curvilinear in form, it is possible that the correlations which reflect a linear relationship may be an inappropriate representation of the observed relationship. Correlations depicting a quadratic form were computed by entering both a linear and a squared TVWATCH term into a regression analysis with achievement as the dependent variable. The results were quite unimpressive. For example, the curvilinear relationship between grade 5 reading rose from -.14 to .16 (curvilinear relationships are unsigned) with the percentage of accounted for variance increasing from .02 to .025. The very small increase observed for reading is quite typical of all the cognitive areas in the Pennsylvania grade 5 and 8 data.

TABLE 3
Summary of Correlations Between Student Performance and TVWATCH and HOMEWORK Across Grade Levels

	TVWATCH			HOMEWORK		
Area Measured	5	8	11	5	8	11
Cognitive Areas						
Reading	-.14	-.12	-.13	-.04	.09	.20
Writing	-.12	-.09	-.13	-.07	.13	.20
Mathematics	-.10	-.15	-.14	-.07	.05	.13
Law/Government	-.09	-.11	-.13	-.06	.08	.16
Health	-.12	NA	NA	-.04	NA	NA
Career Awareness	-.11	-.13	-.13	-.04	.04	.14
Knowledge of Human Accomplishments	-.07	-.08	-.10	-.04	.08	.19
Information Usage	-.13	-.10	-.12	-.02	.09	.21
Noncognitive Areas						
Self Esteem	-.09	-.08	-.09	-.02	.16	.22
Understanding Others	-.02	-.09	-.09	.00	.12	.15
Interest in School/Learning	-.11	-.08	-.05	.10	.29	.37
Societal Responsibility	-.12	-.07	-.06	.07	.26	.31
Health Practices	NA	-.07	-.02	NA	.21	.30
Creative Activities	-.07	-.04	-.10	.07	.03	.08
Appreciating Human Accomplishments	-.06	-.06	-.12	.07	.23	.31

TABLE 4

Relationship of Achievement and Television Viewing for Student Level Data in Pennsylvania, Rhode Island and Texas

			Hours TV Viewing Per School Night					
Pennsylvania	Grade	N	1 hr.	2 hrs.	3 hrs.	4 hrs.	5+ hrs.	r
EQA Reading[1]	5	3256	50.87	51.94	51.12	50.01	47.70	-.14
EQA Reading[1]	8	3040	50.91	51.58	50.50	50.63	47.69	-.12
EQA Reading[1]	11	3497	51.35	50.46	50.01	49.01	46.67	-.13

			Hours TV Viewing Per Day					
Rhode Island (1977)	Grade	N	1	1-2	3-4	4-5	5	
ITBS-Overall Achievement[2]	4	3435	4.0	4.3	4.4	4.3	3.9	
ITBS-Overall Achievement[2]	8	4251	8.1	8.1	8.0	7.8	7.3	
Rhode Island (1977)	Age	N	1	1-2	2-3	3-4	4-5	5
State Assessment-Overall Ach.[3]	17	3503	79.2	78.1	75.4	73.3	73.8	69.5

			Hours TV Viewing Per Day				
Texas (1977)	Grade	N	None	1-2	2-4	4-5	5
CAT -- Total Reading[4]	6	10,400	6.6	6.8	6.6	6.0	5.4
CAT -- Total Math[4]	6	10,400	6.7	7.0	6.8	6.5	5.9

[1]EQA Reading Comprehension scores are presented in standard score form.

[2]Iowa Test of Basic Skills scores are presented as grade equivalent scores.

[3]RI State Assessment scores are average percentage correct.

[4]California Achievement Test scores are presented as grade equivalent scores.

Separate analyses were conducted for subgroups based on RESIDE, PAREDUC and SEX. Table 5 presents the results for reading achievement in grades 5 and 11. Grade 8 was not shown since the results are similar to grade 5. For most groups in grade 5, the gentle curvilinear trend described in Table 4 persists. For most subgroups, achievement fell off sharply at the five hour viewing point. The subgroup correlations provide a statistical control over variables such as RESIDE and PAREDUC which is similar to partialing. The largest subgroup correlations occur in college graduate and suburban categories. To some extent these categories overlap since the highest concentration of college graduates are found in suburban areas.

Correlations between the amount of time spent on homework and performance in the cognitive areas changed in sign and magnitude across grade levels. Table 3 reveals low negative correlations, most of which are nonsignificant or just barely so. By 8th grade, the correlations have shifted to low positive values. Then, by grade 11, correlations are slightly higher. The pattern of mean scores is nearly identical for all cognitive variables with great consistency within subgroups. Table 6 presents mean scores for reading achievement at each grade level. Subgroup results are also presented for RESIDE, PAREDUC and SEX for grade 11, where relationships are stronger. The basic pattern at grade 5 is one of increasing achievement through one hour spent on homework with a decline in performance with larger amounts of time spent on homework. The curvilinear relationship increased the accounted for variance by only 1%. This pattern seems to reflect the general tendency to assign up to one hour's worth of homework to elementary school students. Those who spend no time achieve less well than those students who require three or more hours to complete work assignments and are apparently the less able students. Greater performance is observed for those students spending a half an hour to two hours on homework. At grade 8, there is an increase in reading achievement across the homework categories, except the last where a decrement occurred. In a linear sense, the correlation of homework and reading was .09 and in a nonlinear (quadratic) sense, .15, an increase of about 1½% of accounted for variance. At grade 11, where greater amounts of homework are generally assigned, achievement increased across homework categories. Even though achievement in the 3+ hours category dropped below the two hour level, it still exceeded the performance in the less than one and one hour categories. Also, in observing the pattern of mean scores for each of the subgroups, great consistency was observed. This is also reflected in the very similar correlation coefficients that are found in each subgroup.

Relationship of Noncognitive Achievement with TVWATCH and HOMEWORK

Correlations between the noncognitive areas and TVWATCH and HOMEWORK may be found on the bottom of Table 3. As with the cognitive areas, the relationship of TVWATCH and all noncognitive areas are low negative values, accounting for only about one percent of the score variance. By contrast correlations between HOMEWORK and noncognitives areas are positive in sign and tend to increase in magnitude across grade level with four areas reaching the .30's by grade 11. As one might expect, the largest correlation is with Interest in School and Learning.

TABLE 5

Relationship of Reading Achievement and Television Viewing for RESIDE, PAREDUC and SEX Subgroups: Student Level Data

Group	Description	N	Hours TV Viewing Per School Night 1 hr.	2 hrs.	3 hrs.	4 hrs.	5+ hrs.	r
RESIDE:	Open Country	827	48.86	51.50	51.23	49.97	47.82	-.09
(Gr. 5)	Small Town	882	52.50	50.62	50.85	49.89	48.83	-.07
	Suburban	946	53.83	54.67	53.28	50.96	49.05	-.20
	Urban	580	49.20	49.60	47.11	48.53	45.15	-.15
PAREDUC:	Some H.S.	384	46.31	48.31	47.06	47.69	45.82	-.06
(Gr. 5)	H.S. Grad.	1389	49.80	50.34	50.23	49.54	47.46	-.10
	Some Post H.S.	654	50.05	53.04	53.47	50.08	47.60	-.16
	College Grad.	612	55.71	54.85	53.43	53.23	50.66	-.17
SEX:	Male	1700	49.53	51.68	50.96	50.07	47.13	-.11
(Gr. 5)	Female	1569	52.13	52.20	51.30	49.94	48.41	-.15
RESIDE:	Open Country	785	52.01	51.22	50.42	50.70	46.42	-.15
(Gr. 11)	Small Town	909	50.65	49.95	49.73	50.31	47.65	-.07
	Suburban	1143	52.08	51.09	49.65	48.81	46.52	-.16
	Urban	662	50.07	48.98	50.47	45.91	46.01	-.14
PAREDUC:	Some H.S.	405	45.82	46.79	47.28	46.79	45.42	.00
(Gr. 11)	H.S. Grad.	1498	49.59	49.15	48.93	48.28	46.31	-.10
	Some Post H.S.	763	51.42	50.92	51.26	49.21	48.04	-.09
	College Grad.	810	55.37	53.31	53.18	52.62	48.39	-.16
SEX:	Male	1700	49.69	48.62	49.59	49.01	46.13	-.07
(Gr. 11)	Female	1797	52.97	52.26	50.40	49.01	47.19	-.02

TABLE 6
Relationship of Reading Achievement and HOMEWORK

Group	Grade	N	Hours Spent on Homework Per School Night None	1 hr.	1 hr.	2 hrs.	3+ hrs.	r
Total Sample	5	3260	47.59	49.92	51.03	49.01	46.71	-.05
Total Sample	8	3038	45.44	50.18	50.75	51.25	47.98	.09
Total Sample	11	3507	45.69	49.89	50.54	52.77	51.75	.20
RESIDE (Grade 11)								
Open Country		782	46.13	50.55	51.78	52.65	53.00	.20
Small Town		899	44.80	50.26	49.88	54.09	50.43	.21
Suburban		1137	46.29	50.17	50.32	52.92	54.77	.21
Urban		663	45.72	48.28	50.36	50.81	48.45	.15
PAREDUC (Grade 11)								
Some H.S.		404	43.16	46.94	46.91	49.58	45.60	.16
H.S. Grad.		1501	45.30	48.81	49.27	51.06	50.73	.17
Some Post H.S.		763	46.84	50.28	51.74	52.60	51.00	.16
College Grad.		811	48.24	53.76	52.95	56.03	56.22	.19
SEX (Grade 11)								
Male		1705	45.19	49.50	50.31	51.65	49.45	.19
Female		1797	47.07	50.36	50.71	53.33	52.67	.16

TABLE 7

Relationship of Interest in School and Learning
with TVWATCH and HOMEWORK

Group	Grade	N	Hours TV Viewing Per School Night: 1 hr.	2 hrs.	3 hrs.	4 hrs.	5+ hrs.	r
Total Sample	5	3282	51.62	51.40	50.15	50.37	48.31	-.11
Total Sample	8	3016	49.90	51.29	50.86	50.85	47.94	-.08
Total Sample	11	3510	49.86	50.39	51.21	50.30	47.16	-.05

Group	Grade	N	Hours Spent on Homework Per School Night: None	1 hr.	1 hr.	2 hrs.	3+ hrs.	r
Total Sample	5	3284	46.63	48.49	50.62	51.66	49.66	.10
Total Sample	8	3015	41.39	48.62	51.52	54.26	50.44	.29
Total Sample	11	3515	42.78	48.87	51.57	54.71	54.11	.37

The pattern of mean scores across TVWATCH and HOMEWORK categories show a great consistency from one noncognitive area to another within a grade level. To illustrate the general trend, data for the Interest in School and Learning area is presented in Table 7. For grade 5 mean scores tend to decrease slightly across TVWATCH category while for grades 8 and 11 lower achievement is observed for the two extreme TVWATCH categories.

Interest in School scores increased in linear fashion across all HOMEWORK categories at grade 11. At grade 5 and 8 the trend was in the form of increasing scores across categories except for the 3+ level where a drop was observed.

Relationship of School Performance with TVWATCH and HOMEWORK

Statewide assessment programs typically report data to schools in the form of school building reports and/or as district reports. Frequently, correlations are reported in which the building or district serves as the unit of analysis. Correlations based on aggregated school or district data are generally larger than correlations based on individual student data. Robinson (1950) pointed out that correlations based on aggregated data, termed ecological correlation, should not be confused with or used as a substitute for an individual correlation. Ecological correlations reflect the statistical relationship based on groups. Thus, in the results which follow, it should be kept in mind that the relationships refer to school building data, not individual student data.

In the EQA program, school buildings are the reporting unit and, therefore, the primary analysis unit. Data derived from students, teachers or department records are in the form of school building means. As will shortly be seen, correlations between TVWATCH and cognitive achievement are considerably higher than those observed for student level data. The school data also reveals that the amount of television viewing is socioeconomically related. PAREDUC, as an indicator of socioeconomic level, correlated negatively with TVWATCH. These correlations were -.49, -.54 and -.55 for grades 5, 8 and 11, respectively. There was also a moderate relationship between PAREDUC and HOMEWORK at grades 8 and 11, where the correlations were .27 and .33. At grade 5, the correlation was only .04. PAREDUC was partialed out in order to obtain an indication of the size of the relationship between achievement and TVWATCH (and HOMEWORK), independent of SES.

Correlations between TVWATCH and cognitive areas shown in Table 8 range from -.39 to -.47 at grade 5 and increase to -.52 to -.65 at grades 8 and 11. Even with PAREDUC partialed out, a significant relationship remains, particularly at grades 8 and 11 where most partial correlations are in the -.40's. A more varied picture emerged in the noncognitive area. With a few exceptions, the correlations were negative and of lower magnitude than in the cognitive area. About half the partial correlations were lower than the zero order correlations. About six of

TABLE 8

Summary of Zero Order and Partial Correlations Between School TVWATCH and School Goal Scores

Goal Area	Grade 5 (N=453) r	Grade 5 (N=453) r_p	Grade 8 (N=151) r	Grade 8 (N=151) r_p	Grade 11 (N=128) r	Grade 11 (N=128) r_p
Cognitive Areas						
Reading	-.47	-.24	-.65	-.50	-.59	-.48
Writing	-.46	-.21	-.65	-.48	-.63	-.49
Mathematics	-.42	-.19	-.62	-.43	-.66	-.52
Law/Government	-.39	-.15	-.59	-.40	-.59	-.41
Health	-.47	-.28	NA		NA	
Career Awareness	-.43	-.21	-.55	-.34	-.54	-.32
Knowledge of Human Accomplishments	-.40	-.14	-.52	-.24	-.54	-.32
Information Usage	-.43	-.19	-.58	-.38	-.57	-.46
Noncognitive Areas						
Self-Esteem	-.32	-.14	-.39	-.22	-.20	-.01
Understanding Others	-.39	-.19	-.57	-.37	-.42	-.35
Interest in School/Learning	-.18	-.20	-.42	-.41	-.15	-.15
Societal Responsibility	-.27	-.28	-.13	-.44	-.18	-.26
Health Practices	NA		-.30	-.40	.21	.04
Creative Activities	-.15	.00	-.05	.10	-.20	.13
Appreciating Human Accomplishments	-.04	-.11	.05	-.18	-.06	.03

Note: r refers to the zero order correlation
r_p refers to the correlation with PAREDUC partialed out
To be significant at the .05 level a correlation must reach .09 at grade 5 and .17 at grades 8 and 11.

TABLE 9

Summary of Zero Order and Partial Correlations Between School HOMEWORK and School Goal Scores

Goal Area	Grade 5 (N=453)		Grade 8 (N=151)		Grade 11 (N=128)	
	r	r_p	r	r_p	r	r_p
Cognitive Areas						
Reading	-.01	-.04	.32	.21	.27	.15
Writing	-.01	-.05	.29	.17	.23	.08
Mathematics	.01	-.01	.28	.15	.23	.06
Law/Government	.05	.04	.23	.09	.31	.16
Health	.06	.05	NA		NA	
Career Awareness	.02	-.21	.26	.12	.10	-.11
Knowledge of Human Accomplishments	.00	-.14	.24	.07	.12	-.09
Information Usage	.00	-.19	.32	.20	.18	.06
Noncognitive Areas						
Self-Esteem	.04	.02	.38	.31	.41	.34
Understanding Others	.05	.04	.28	.15	.24	.17
Interest in School/Learning	.11	.11	.46	.43	.41	.42
Societal Responsibility	.12	.11	.19	.33	.26	.29
Health Practices	NA		.37	.40	.34	.50
Creative Activities	-.02	-.03	.05	-.01	.16	-.02
Appreciating Human Accomplishments	.06	-.11	.27	.40	.47	.45

Note: r refers to the zero order correlation
r_p refers to the correlation with PAREDUC partialed out
To be significant at the .05 level a correlation must reach .09 at grade 5 and .17 at grades 8 and 11.

the partial correlations remained at the same level and the remainder exhibited some increase. Those areas consistently demonstrating a reduction in correlation when PAREDUC was partialed out were Self-Esteem and Understanding Others. The correlation of TVWATCH and Interest in School and Learning remained at the same level after partialing out PAREDUC. Societal Responsibility revealed an increase in correlation after partialing. Most of the correlations for Creative Activities and Appreciating Human Accomplishments were nonsignificant.

Table 9 summarizes the school correlations involving HOMEWORK and goal scores. All zero order correlations for the cognitive area at grade 5 were nonsignificant as were five of the partial correlations. Oddly, three areas having zero or nearly zero correlations took on low negative values after PAREDUC was partialed out. Most zero order correlations at grades 8 and 11 were in the .20's and .30's but were considerably reduced after partialing out PAREDUC.

All correlations involving noncognitive areas at grade 5 were nonsignificant or only barely significant. At grades 8 and 11, Self-Esteem and Understanding Others exhibited modest correlations which were reduced slightly by partialing. Correlations essentially unaffected by partialing were observed for Interest in School and Learning (grades 8 and 11), Societal Responsibility (grade 11), Health Practices (grade 8) and Appreciating Human Accomplishments (grade 11). Areas showing somewhat of an increase under partialing were Societal Responsibility (grade 8), Health Practices (grade 11) and Appreciating Human Accomplishments (grade 8). HOMEWORK bore a nonsignificant relationship with Creative Activities for all grade levels.

DISCUSSION

The present study supports the fact that children consume a very large amount of time watching television, a phenomenon which is disturbing to many because it tends to replace time previously spent reading, playing and sharing in family activities. Finding that three or more hours per school night is spent watching television by 73% of the 5th graders, 70% of the 8th graders and 44% of the 11th graders indicates that a substantial proportion of youth watch, by extrapolation, at least 1,100 hours of television per year. Television viewing was related to educational level of the parents with television viewing increasing as educational level decreased. The amount of television viewing was very similar for students in rural, small town and suburban areas, with urban children tending to indulge in the greatest amount of television viewing. Males and females watched about equal amounts of television.

The pattern of achievement across categories of television viewing was very stable, appearing in data from Rhode Island and Texas as well as in Pennsylvania. The general trend was even found in subgroups based on community type and parental education. The consistent picture of low negative correlations observed between TV viewing and both cognitive and noncognitive performance, when the student was a unit of analysis,

corresponds to the findings of Scott (1956) and Witty (1967). Other studies have shown no significant relationship between television viewing and achievement (Clark, 1951; LaBlonde, cited by Hornik 1978; and Ridder, 1963). In a study controlling on a relevant variable, Thompson (1964) found that a correlation of -.29 between television viewing and achievement was reduced to -.02 when mental age was partialed out. In the present study, correlations were not substantially changed when subgroup analyses were peformed. Likewise, curvilinear correlations based on a quadratic model revealed little improvement in the variance accounted for.

To summarize the student level analyses involving television, there was little evidence, in a linear or curvilinear sense, for the total sample, or relevant subgroups, of a meaningful relationship with cognitive or noncognitive achievement. The only point where a substantial drop in achievement occurred was when students indulged in five or more hours of television viewing per school night.

Homework patterns appeared essentially the same for students in various types of communities. Females tended to spend more time on homework than males. The amount of time spent on homework was only slightly greater for children from parents with higher levels of education. The tendency to spend more time on homework was more highly related to some of the noncognitive areas, especially Interest in School and Learning at Grades 8 and 11. There was a tendency for cognitive achievement to fall off when the amount of homework reached the three or more hours levels, which probably reflects the fact that many students who spend that much time on homework are the less able students who must struggle harder to succeed academically. Thus, a variable which clouds interpretation is student ability level.

In the school level analysis, where correlations are typically higher in magnitude, inferences refer to characteristics of schools rather than individual students. School level performance demonstrated strong negative relationships between television viewing and cognitive achievement, particularly at grades 8 and 11. Thus, schools in which the mean amount of television viewing was relatively high tended to have low mean achievement in the cognitive areas. Conversely, schools with higher levels of cognitive achievement tended to have lower mean scores on television viewing. Since schools housing students who watched greater amounts of television were characteristically schools drawing from lower levels of parental education, the effect of SES should be removed. Even after partialing out the effect of mean parental education, a substantial negative relationship between television viewing and cognitive achievement remained, particularly at grades 8 and 11, where the accounted for variance ranged from 6% to 27%. Correlations with television viewing in noncognitive areas were more variable, typically of lower magnitude, than cognitive areas.

School level correlations between amount of time spent on homework and cognitive outcomes were rather variable, being essentially uncorrelated at grade 5 and predominantly in the .20's and .30's at grades 8 and 11. After partialing out mean parental education level, the relationships generally reverted to a level of nonsignificance. Correlations with the noncognitive areas were very low at grade 5 but were more substantial at grades 8 and 11. After partialing, 11 of 14 correlations were significant, accounting for 3 to 25% of mean score variance.

REFERENCES

Clark, W. J. Of Children and Television. Cincinnati: Xavier University, 1951.

Hertzog, J. F. and Seiverling, R. F. Getting Inside the EQA Inventory, Section 1 Goal and Measurement. Harrisburg, Pennsylvania: Pennsylvania Department of Education, 1978.

Hornik, R. C. Television Access and the Slowing of Cognitive Growth, American Educational Research Journal, 1978, 15, 1-15.

Kohr, R. L., Hertzog, J. F. and Seiverling, R. F. Getting Inside the EQA Inventory, Section 2 Measurement Safeguards. Harrisburg, Pennsylvania: Pennsylvania Department of Education, 1979.

Rhode Island Statewide Assessment Program, Highlights Report: Norm Referenced Assessment of 4th and 8th Graders. Providence, RI: Rhode Island Department of Education, 1977a.

Rhode Island Statewide Assessment Program, Highlights Report: Criterion Referenced Assessment of 17 Year Old Students. Providence, RI: Rhode Island Department of Education, 1977b.

Ridder, J. Public opinion and the relationship of TV viewing to academic achievement. Journal of Educational Research, 1963, 57, 4, 204-207.

Robinson, W. S. Ecological correlations and the behavior of individuals. American Sociological Review, 1950, 15, 351-357.

Scott, L. Television and school achievement, Phi Delta Kappa, 1956, 38, 25-28.

Texas Assessment Project, Achievement in Reading and Mathematics 6th Grade. Austin, Texas: Texas Education Agency, 1978.

Witty, T. Children of the TV era, Elementary English, 1967, 44, 528-535.

APPENDIX A
Summary of Instruments
Educational Quality Assessment Program

Cognitive Areas	Description	Total No. Items and (No. Items Per Form)
Reading	Measurement includes literal comprehension of details, relationships, and major ideas explicitly stated in a passage. Secondly, mention of details, relationships and major ideas implied in a passage and use of contextual information as a cue to meaning.	48 (12 to 16)
Writing Skills	This area taps (a) mechanics and usage - the use of rules and conventions necessary for effective written communication, (b) sentence sense - the use of clear, economical and effective sentences which avoid the pitfalls of poor writing, (c) paragraph organization and development - the use of coherence, unity and transition in the organization and development of paragraphs and larger units, (d) effectiveness and appropriateness - the use of the most effective or appropriate tone, style or flavor for a given purpose, audience or situation.	45 to 60 (15)
Mathematics	The items measure mathematical concepts, computations and/or problem solving.	60 (15 to 20)
Knowledge of Law and Government	Three major areas of knowledge were identified as essential to good citizenship. They are broadly described as knowledge of government, knowledge of law and knowledge of interdependence of people.	21 to 48 (7 to 12)
Knowledge of Health Safety (Grade 5 only)	Students are to demonstrate knowledge of how to take care of themselves and how to keep physically fit, what the requirements are for physical and mental health and what practices, harmful to health, should be avoided.	45 (15)
Career Awareness	The students are queried on their awareness of duties, training, abilities and educational requirements of various occupations, an understanding of the labor market conditions, and skills in gathering such data, such as knowledge of occupational clusters and publications.	40 to 42 (10 to 14)

Cognitive Areas	Description	Total No. Items and (No. Items Per Form)
Knowledge of Human Accomplishments	Students are asked to demonstrate recognition of persons, theories or ideas, works, inventions or phenomena. Students are expected to be able to recognize the names of prominent persons and concepts to which they should have been exposed within the school setting.	45 to 60 (15)
Information Usage	Students are asked to show that they are able to examine problems in the logical way, to identify them properly, to seek whatever information is needed to establish facts, to be aware of the consequences of decisions, and to have the ability to choose courses of action which are most congruent with their own values and desires.	32 to 33 (8 to 11)

Noncognitive Areas	Description	Total No. Items and (No. Items Per Form)
Self-Esteem	Students are asked to relate their feelings of success and feelings of acceptance, primarily in the school setting.	32 to 33 (8 to 11)
Understanding Others	Students are asked to respond to approaches and interactions with persons of differing skin color, religious beliefs, physical characteristics, socioeconomic status or cultural tradition.	40 to 45 (10 to 15)
Interest in School and Learning	Students are to display their feelings on the climate and learning atmosphere in the school, the educational experiences the school provides, quality of the personal interactions it fosters between student and educator, and the student's attitude toward learning.	27 to 40 (9 to 10)
Societal Responsibility	Students are asked if they will assume responsibility for their actions and the actions of groups to which they belong, work cooperatively, demonstrate integrity when dealing with others, and take the initiative and assume leadership as well as support group efforts as followers.	27 to 48 (9 to 12)
Health/ Safety (Grades 8 & 11 only)	Students are to demonstrate that they have acquired habits and attitudes which increase the probability of remaining healthy, safe and fit throughout life.	48 (12)

Noncognitive Areas	Description	Total No. Items and (No. Items Per Form)
Creative Activities	Activites are included in a wide variety of fields, not only the sciences and the arts but also the organization of human affairs and the development and exercise of salable skills and the production of any of a host of practical things that enrich our way of living.	36 to 40 (10 to 12)
Appreciating Human Accomplishments	Student openness is displayed by a willingness to engage in listening, watching or needing activities relating to significant accomplishments. In addition, the student reaching the higher levels of openness will display willingness to learn about accomplishments and what is entailed in producing them.	57 to 64 (16 to 19)

APPENDIX B

SUMMARY OF STUDENT VARIABLES

VARIABLE	MEASURE	WEIGHTING	INDEX DESCRIPTION
PAREDUC (Parental education)	The higher level of the following two was used: (1) The students reported the the highest level of formal education attained by their fathers or male guardians. (2) The students reported the highest level of formal education attained by their mothers or female guardians.	8 = Ph.D. or professional degree 7 = Some work toward Ph.D. or professional degree 6 = Master's degree 5 = Bachelor's degree 4 = Some college, vocational, business school after high school 3 = High school graduate 2 = Some high school, but not a graduate 1 = Completed grade school 0 = None or some grade school	A higher value indicates that the school draws students from homes in which at least one of the parents has a higher average level of formal education.
RESIDE (Type of community)	The students with the aid of the monitor reported the types of communities in which they were then living.	7 = In Philadelphia or Pittsburgh 6 = Inside a large city (100,000 to 500,000 people.) 5 = Inside a medium size city (10,000 to 100,000) 4 = In a suburb of Philadelphia or Pittsburgh 3 = In a suburb of a large city 2 = In a suburb of a medium size city 1 = In a small town (less than 10,000 people.) 0 = In the open country or in a farming community.	A higher value indicates that the students reside in larger areas of dense population, i.e., more removed from open space.
HOMEWORK (Amount of homework)	The students reported their estimates of time usually spent on homework from the time they get home from school until they go to bed.	4 = About three hours or more 3 = About two hours 2 = About one hour 1 = Less than one hour 0 = None	A higher value indicates that students of the school spent more time on homework on school nights.
TVWATCH (Student time spent watching television)	The students reported their estimates of time usually spent watching television from the time they get home from school until they go to bed.	4 = About five hours or more 3 = About four hours 2 = About three hours 1 = About two hours 0 = About one hour or less	A higher value indicates that students of the school watch more television on school nights.